Some authors have taken Gmelin's *Voluta lineata*, Syst. Nat. ed. xiii, p. 3454, to be a *Mitra*. The figures referred to in Martini, however, more probably represent the common Mediterranean *Pollia d'orbignyi* (Payr.). The type is unfortunately no longer to be found in Spengler's collection at Copenhagen.

Swainson's *Conoelix lineatus*, Zool. Illustr., ser. 1, vol. 1, pl. 24, Jan., 1821, is probably a discolored *M. conica* Schum., according to Reeve.

I am indebted to Dr. Pilsbry for advice on species (a) and (c).

MONOCONDYLAEA COSTULATA MORICAND

WILLIAM B. MARSHALL

Dr. F. Haas in "Senckenbergiana", vol. 13, No. 1, page 48, figs. 31a and 31 b, 1931, has discussed the type and another specimen of *Unio* (*Monocondylaea*) *costulata* Moricand, 1858.[1] His figures of the type are excellent, and he has sent to the United States National Museum copies of the still more excellent original photographs from which these figures were made. This type is deserving of even closer study than has been given to it, for while both Moricand and Haas place it in *Monocondylaea*, it has some features which seem to make it impossible that this can be the correct genus. If it be the correct genus, the species is certainly an aberrant one.

As Haas points out, Moricand's figure over-emphasizes the depression running from the beaks to the ventral margin, and also has the ribs entirely out of proportion. In fact Moricand's figure might be said to be more or less diagrammatic, indicating that he was satisfied to transmit to his readers a general impression without being too exact. In his description of this species, Moricand says, "epi-

[1] 1858. Revue et Magasin de Zoologie, p. 453, plate 15, figures 1 and 1a.

dermide . . . olivaceo, unicolare". If the species be true *Monocondylaea* the color should not be uniform, as *Monocondylaea* should always have one or more green rays on the posterior area much darker than the surrounding portion of the shell. It may be that wishing to transmit only a general impression, Moricand did not think this feature worth mentioning, if, in fact, it does exist in the type. The National Museum contains a specimen of the very next species described by Moricand as *Monocondylaea reticulata,* which is in our records as having been received by Isaac Lea indirectly from the author through Mr. W. A. Haines. In his description of this species, Moricand says: "Epidermide olivacea, unicolare, reticulato". Our specimen contains a distinct green line on the posterior area, while near the beaks there are several of these radiating green lines. The green on this area is as it should be in this genus.

In describing *costulata* Moricand says: "Epidermide crasso". In French he adds, "peu adhérent". Probably an examination of the type would show that the reason he was impressed by an apparent unusual thickness of the periostracum was because he unwittingly was dealing with the periostracum and the prismatic layer combined. Haas' figures show distinctly that the periostracum of the type of *costulata* is given to splitting and peeling. In the many specimens of *Monocondylaea* that I have handled, there has never been one that had a peeling periostracum. All the species of the genus and, in fact, practically all species of South American Mutelidae (as defined by Simpson, not Ortmann) except a few of the very large ones such as *Leila blainvilleana,* are formed on what I might call a "hug-me-tight" principle; that is, the prismatic layer is thick and even after long drying in the dry atmosphere of a museum it clings to the nacreous layer beneath it. It has been my experience that any species of naiad which has a peeling periostracum has a thin prismatic structure, and when there is any peeling, both the periostracum and the prismatic layer come off together. Even in some of our North American gigantic naiads such as *Megalonaias gigantea* Bar.

(*Quadrula heros* Say), which are prone to peel, the prismatic layer is a mere film. When peeling occurs it makes the flakes of "periostracum" appear to be very thick. This peeling periostracum throws another element of doubt into the position of this species in *Monocondylaea.*

Radiating ribs should not occur in *Monocondylaea.* According to Haas, the prominent radiating ribs on *M. costulata* do not show in the calcareous structure underneath. The sculpture of the periostracum should show in the prismatic layer, but except when the external sculpture is bold, such as spines or convolutions or ridges, it does not usually show in the nacreous structure, and that is probably the explanation of the absence of these ribs in the exposed calcareous portion of Moricand's type. An examination of the peeling portion of the shell will probably show that the prismatic layer has come away from the nacreous layer with the periostracum. If hot caustic potash solution be applied to a small portion of one of the ribs, to remove the periostracum without effecting the prismatic portion, the ribs which show so plainly in the periostracum should, according to all rules, show in the prismatic layer, and this layer should show also the beautiful arrangement of the ends of the hexagonal prisms which constitute it. Periostracal and (or) prismatic layers are the elements in external sculpture. Nacreous layer is to be regarded as a filling, smoothing and stiffening material, which forms in varying quantities as needed for different parts of the interior and which, when broken, can usually be roughly repaired with the same material. Doctor Haas is right when he says that the rib-like radiations of the interior between the pallial line and the ventral margin has nothing whatever to do with the external ribbing. This is a feature belonging entirely to the nacreous layer only.

The cardinal area of *costulata* is not what it should be in typical *Monocondylaea.* Typically, the tooth of the left valve should hook around in front of the tooth in the right valve, and there should be no distinct socket for the former to sink into in the latter.

Some may think that too much value has been given to surface characters. Probably many of us, before we had gained much experience in malacology, have had some difficulty in distinguishing between imperfect specimens of *Lymnaea* (*Pseudosuccinea*) *columella* and *Succinea*. Later we learned that *columella* has the periostracum beautifully, minutely, spirally striate, and that this does not occur in *Succinea*. When the periostracum is removed the striation still shows plainly in the calcareous portion. This single instance is sufficient to show that minute details are of considerable importance.

Readers of The Nautilus may find it worth while to examine specimens of *Monocondylaea* in their collections to see whether any of them have a peeling periostracum, taking care, of course, not to mistake erosion for peeling. We shall be glad to hear of any such specimens.

U. S. National Museum.

THE GASTROPOD FAMILY PLEUROCERIDAE IN PENNSYLVANIA

BY STANLEY T. BROOKS, PH.D.

Due to the great number of papers on this subject by A. E. Ortmann, Bryant Walker, F. C. Baker, and Calvin Goodrich, the author does not deem it necessary to go into the complicated explanation of all of the geographical factors involved. Mention will be made of the various routes of migration with the understanding that all students of this field of work will have undoubtedly referred to the other more comprehensive publications.

This paper, therefore, will outline the distribution of the Family *Pleuroceridae* in this state and will but mention the extent of the migration into the northeastern states. This Commonwealth is again the Keystone State in that all of the species of this family, in the region indicated, have been